Oil Sands Tax Expenditures

Ken Ketchum
Department of Finance

Robert Lavigne
Department of Finance

Reg Plummer
Department of Finance

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FOREWORD

In recent years, there has been increasing public attention to the support provided by the business income tax system to the natural resource extracting sectors, and, in particular, to oil sands projects. Critics have argued that the government does not provide complete and easily understandable estimates of these tax expenditures and of other support that goes to these sectors.

The recently published Department of Finance reports *Tax Expenditures and Evaluations* and the accompanying *Tax Expenditures: Notes to the Estimates/Projections* are a compendium of tax concessions granted through the income and sales tax regimes. These documents describe a benchmark tax structure and identify tax measures that differ from the benchmark. *Tax Expenditures and Evaluations* attempts to provide annual estimates of the tax expenditures associated with each measure, often using a micro-simulation model to analyze data for a particular year.

One of the most important tax expenditures associated with the oil sands is the accelerated capital cost allowance (ACCA) and the key feature of the ACCA is that it provides a tax deferral. The model used to estimate tax expenditures in *Tax Expenditures and Evaluations* is not capable of providing meaningful estimates of tax expenditures arising from tax deferrals, such as the ACCA.

The current paper attempts to quantify the federal tax expenditures associated with new investments in the oil sands, including tax deferrals. In order to provide some context, the working paper provides a brief history of the tax regime applicable to oil sands. The paper also discusses the model used to estimate the tax expenditure estimates and includes some discussion of the difficulties associated with tax expenditure estimation and interpretation. Finally, the paper provides an estimate of the tax expenditures that will be associated with projected oil sands development.

On May 30, 2000, the Commissioner of the Environment and Sustainable Development (CESD) tabled in the House of Commons a report entitled *Managing Sustainable Development*. Chapter 3 of the CESD report examines government support for energy investments and discusses the difficulties of estimating tax expenditures for the oil sands.

The oil sands tax expenditure estimates provided in our paper provide supplementary information to the CESD study and a much better factual base than has previously existed upon which to discuss the federal income tax costs associated with new oil sands development.

This study could not have been done without the co-operation, advice and support of many of the oil sands developers and our colleagues at Natural Resources Canada. The authors are, however, solely responsible for the contents of this report including any errors or omissions.

Introduction

This report describes the Oil Sands Tax Expenditures Model (OSTEM) used to estimate the size of the federal income tax expenditure attributed to the oil sands industry. The model was developed within the Business Income Tax Division of the Department of Finance. Data inputs for the model were provided by many of the oil sands developers (OSD) and Natural Resources Canada (NRCan).

The Oil Sands

The oil sands are a strategic Canadian resource. With bitumen reserves greater than the proven reserves of Saudi Arabia, the oil sands could, at present levels of consumption, satisfy Canada's oil requirements for hundreds of years. However, the cost of extracting bitumen from the oil sands and upgrading it to (synthetic) light crude oil has been very high compared with conventional sources. To encourage the development of this resource, the federal government provides various tax preferences to oil sands projects. Recent technological advances have substantially reduced the cost of producing oil from the oil sands. These factors, combined with favourable crude oil prices, have led to the announcement of billions of dollars in new oil sands investments.

The "oil sands" (also known as the "tar sands" and more accurately described as "bituminous sands") are a group of geological deposits in western Canada, primarily in Alberta, that contain "bitumen", a very heavy form of petroleum, mixed with water, sand and clay. Collectively, these deposits are enormous -- they contain as much as 2,500 billion barrels of oil in place, at least 300 billion barrels of which are considered ultimately recoverable (that is, economically viable using known technology). Less than 3 billion barrels have been recovered to date.

Oil can be produced from the oil sands using either a mining or an *in situ* approach. The mining approach is used where the oil sands lie less than 75 metres from the surface. In the mining approach, the material lying over the oil sands, the overburden, is first removed and then the oil sands are removed by open-pit mining techniques. The oil sands are then delivered to an extraction plant where the bitumen is separated from the sand and other non-hydrocarbon materials present. The bitumen is then generally delivered to an upgrader that lightens and "sweetens" the bitumen into a synthetic light crude oil. All of these steps can be undertaken in relatively close proximity or they may be more widely dispersed.

Where the oil sands are more than 75 metres below the surface, the mining approach is replaced by the *in situ* approach which resembles conventional oil and gas exploitation in that wells are used to make contact with the oil sands. The essence of the *in situ* approach is the introduction of heat, normally via steam, into the oil sands which allows the bitumen to flow to well bores and then to the surface.

History of Resource Tax Policy (1969-1996)

Prior to 1969, the federal income tax regime included some provisions to encourage mineral exploration and development. Income from mines benefited from a special deduction known as "percentage" depletion. This lowered income taxes by up to one third of the statutory tax rate. Crown and provincial royalties were deductible in the calculation of income tax. A three-year tax holiday applied to the mining industry, exempting the profits of new mines from taxation during the first three years of operation. Discretionary deductions such as capital cost allowance (CCA) and exploration and development expenses could be saved during this tax holiday and applied against future income.

In 1969, the Royal Commission on Taxation (known as the Carter Commission) recommended many changes to personal and corporate income taxes. The most important proposals for the mining sector were to replace the three year tax holiday with an accelerated capital cost allowance (ACCA) deduction, treat oil sands mines as mines rather than oil and gas producers, and replace the "percentage" depletion allowance with "earned" depletion.

Many of the Carter Commission proposals were enacted in the 1971 budget. The 1971 budget announced that oil sands mines would be entitled to the same tax incentives as other mining operations. This budget also phased out the three-year tax holiday for mines. This reform was undertaken because a tax holiday creates an inefficient incentive; the value of a tax holiday is directly proportional to the degree of profitability of the project. A highly profitable project (which requires little or no added incentive) would receive a large subsidy whereas a marginal project would receive very little. In addition, this measure often resulted in firms being able to recover more than their initial investment before becoming taxable.

The accelerated CCA provision that was announced in the 1971 budget provided a more equitable incentive to mining development than the three-year tax holiday. This provision made equipment acquired for both new mines and "major" mine expansions (increasing its capacity by 25% or more) eligible for ACCA. This allowed the mining firm to write off the investment at 30% per year or to the extent of income from the project, whichever was greater in a particular year.

Another change was the phased replacement of the "percentage" depletion allowance with earned depletion. The latter introduced a bonus deduction earned at the rate of 33 1/3% of eligible exploration and development expenditures. Earned depletion applied to most types of capital expenditures incurred for mining and oil and gas production.

In the 1974 budget, the federal government ended the deduction in respect of Crown royalties and mining taxes and provided an income tax rate abatement for income earned in the resource extraction sector. This abatement was set at 15% for income from mines and 10% for income from oil and gas. In 1975, the income tax abatement rate for oil and gas production income was increased to 12%.

Effective January 1, 1976, the federal government replaced the two income tax abatements with a resource allowance[1] deduction calculated as 25% of "resource profits". Resource profits are calculated as revenue minus certain expenses (e.g. operating costs and capital cost allowances). Other expenses such as those for interest, exploration, and development are all deducted after the calculation and deduction of resource allowance.

In 1976, the federal government issued a remission order allowing the participants in the Syncrude oil sands project to deduct joint venture payments to the Alberta government in the calculation of income.[2] This remission order will expire in 2003. The resource allowance was also provided to Syncrude on resource income net of joint venture payments.

The earned depletion allowance was phased out by the tax reform of 1987. Taxpayers cannot earn new deductions, however, they are still permitted to use any accumulated amounts in their existing pools. In addition, the CCA rate for depreciable assets was reduced to 25% from 30%.

In 1995, the Alberta government introduced a generic royalty regime for all new oil sands recovery projects. The Alberta government is converting existing oil sands projects to the generic royalty system, generally after a transitional period.

The 1996 budget introduced changes to treat capital expenditures for *in situ* oil sands projects the same as those for mining projects. Before the 1996 budget, the equipment used at *in situ* projects had been subject to the same CCA treatment as oil well equipment. The change extended eligibility for accelerated deductions to oil sands projects that were producing by using wells.

The 1996 budget amended the rules governing accelerated CCA to allow investments that exceeded five per cent of gross project revenue to qualify for ACCA. This applied to all mines and oil sands projects.

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[1] For a more complete discussion of the resource allowance, see *Tax Expenditures: Notes to the Estimates/ Projections 2000* (pages 70-71).

[2] The Syncrude project produces synthetic crude oil from oil sands using mining methods. It is the largest producer of oil in Canada. When the project was being planned in the 1970's, provincial Crown royalty charges were fully deductible in the computation of income taxes. After a joint venture agreement with the province of Alberta was signed, the project participants received assurances from the federal government that the joint venture payments to the province would be treated as royalties.

Table 1 provides a summary of the income tax rules for mining and conventional oil and gas.

Table 1
Taxation of Mining, Oil, and Natural Gas

	Mining	Oil and Natural Gas
Exploration Expenses	Fully deductible. Definition of exploration includes pre-production development costs for mines.	Fully deductible. Definition of exploration may include some development costs for oil and gas wells and oil sands projects.
Development Expenses	Deductible at 30% per year.	Deductible at 30% per year.
Property Costs	Deductible at 30% per year.	Deductible at 10% per year.
Crown Royalties and Mining Taxes	Non-deductible. Resource allowance provided in lieu of deductibility.	Non-deductible. Resource allowance provided in lieu of deductibility.
Resource Allowance	25% of net income before interest, exploration, property and development costs.	25% of net income before interest, exploration, property and development costs.
Capital Cost Allowance[3]	Most machinery and equipment is depreciated at 25% declining balance.	Most machinery and equipment is depreciated at 25% declining balance.
Accelerated Capital Cost Allowance	Eligible capital expenditures for new mines or major expansions as well as capital costs exceeding 5% of gross project revenue may be deducted to the extent of income from a particular mine.	Available only for oil sands mines and *in situ* oil sands projects.
Flow Through Shares[4]	Flow through shares may be used to finance exploration and certain development costs.	Flow through shares may be used to finance exploration and certain development costs.

[3] The current income tax rules permit expenditures on capital to be deducted over a period of time that generally reflects the economic life of the asset. This is accomplished through a "capital cost allowance". The declining balance system creates a "pool" of deductions from which the taxpayer may deduct the stated percentage each year, while reducing the pool of eligible deductions by the same amount.

[4] Flow through shares are a tax-assisted mechanism to assist the financing of the exploration and development of resource properties. These shares are often sold to individual investors who may then deduct exploration and development expenses on their personal income tax returns, rather than having the firm that incurred the expense use these deductions. Flow through shares are particularly useful to junior firms that lack sufficient taxable income to use their own deductions. Flow through shares are not generally used to finance oil sands projects.

What is a Tax Expenditure?

Tax expenditures are those tax concessions that are used as alternatives to direct government spending for achieving government policy objectives. There is no widely accepted operational method for estimating tax expenditures. The recently published Department of Finance report entitled *Tax Expenditures and Evaluations 2000* estimates tax expenditures as deviations from a benchmark tax system.

This paper follows the same basic approach to estimating tax expenditures as the above-mentioned report. Thus, a benchmark tax system is defined. Tax measures that deviate from the benchmark system are identified. A tax expenditure is estimated for each measure by first calculating the federal income tax that would have been paid if that measure were removed from the current tax system. The tax expenditure is the difference between the federal tax paid if the measure were removed compared to the federal tax paid under the current tax regime. The total tax expenditure for the oil sands is calculated as the difference between federal income tax paid under the benchmark tax system and that paid under the current tax system.

This approach makes an important simplifying assumption. It assumes that the level and timing of the currently proposed investments in the oil sands would take place irrespective of any changes to the tax regime. That is, it assumes that the removal of any of the existing tax incentives for the mining industry would not cause any projects to be delayed or scaled back.

The benchmark for the corporate tax system includes the existing tax rate (i.e., the statutory rate plus the surtax), unit of taxation, time frame of taxation, and those measures designed to reduce or eliminate double taxation.

The definition of income on which the federal tax is calculated is crucial in determining what constitutes the benchmark system. Tax provisions that provide for the deduction of current costs incurred to earn income are considered to be part of the benchmark system. For example, the deductibility of labour costs or economic depreciation of assets in determining business income are part of the benchmark and would not be considered tax expenditures. However, provincial income taxes are not considered deductible in the benchmark system.

Crown royalties and mining taxes, to the extent these represent a cost of production, are considered part of the benchmark tax system. The non-deductibility of these costs means the government collects more income taxes than would otherwise occur in the benchmark system. This is an example of a negative tax expenditure.

The resource allowance provides a deduction in the calculation of taxable income in lieu of the non-deductibility of royalties. It can also be seen as a rate reduction. For the purpose of this exercise, the resource allowance and the non-deductibility of royalties are taken together. The difference between resource allowance and the royalties paid is the net impact on federal taxable income resulting from these two measures. If resource allowance exceeds non-deductible royalties then federal taxable income is decreased as a result of these measures and together they

represent a tax expenditure. If royalties exceed resource allowance, then federal taxable income exceeds the benchmark level and the net amount represents a negative tax expenditure.

An important source of tax expenditures for the oil sands involves the fast write-off of certain types of resource expenses (i.e., CEE and CDE) and capital costs. For the purposes of this study, the benchmark regime assumes that all capital and exploration and development costs are deductible on a 25% declining balance basis. In addition, the existing available for use and half-year rules for the CCA calculation are considered to be part of the benchmark system.

Mining and the oil sands industry qualify, under certain circumstances, for the ACCA. There are three ways that an investment may qualify for the ACCA:

1. If the investment is for a new mine;
2. If the investment is for the purpose of a major expansion (i.e., output will expand by more than 25%); or
3. If total investment in a year exceeds 5% of gross revenue, the portion of the investment in excess of 5% of gross revenue would qualify.

The mine owner with investments qualifying for ACCA may make an additional deduction equal to the lesser of the ACCA investments and the income from the mine. The half-year rule does not apply. The income restriction is referred to as a ring-fence. The ring-fence restriction means, for example, that an investment in a new mine is not eligible for the ACCA until the mine actually begins earning income. A new oil sands project may require four to six years of investment before producing income, therefore this restriction can delay taking advantage of the ACCA quite considerably. On the other hand, for a 25% expansion the mine owner is already earning income from the mine when the investment is made. In this case, the ring-fence is less restrictive.

THE MODEL

The Oil Sands Tax Expenditures Model (OSTEM) was developed by the Business Income Tax Division of the Department of Finance[5] to calculate the federal corporate tax expenditures associated with oil sands projects. Using project-level projections of capital investment, operating expenses, and production, OSTEM calculates annual revenues, royalties, and federal taxes at the project level. Industry totals are calculated by summing over all projects.

OSTEM calculates tax expenditures by comparing taxes paid under different tax regimes. Thus, for example, in a given year the total tax expenditure is the difference between federal income taxes paid under the current regime and federal income taxes paid under the benchmark regime.

[5] Mr. Robert Lavigne was responsible for developing the original model. He worked with the Business Income Tax Division of the Department of Finance under the Accelerated Economist Training Program.

The principal characteristics of the benchmark tax regime are as follows:

- all capital and exploration and development costs are deductible on a 25% declining balance basis;
- full royalty deductibility in place of the resource allowance; and
- a 28% tax rate plus the 1.12% surtax applicable to all resource income.[6]

The model calculates a separate tax expenditure for each of the following:

- the total tax expenditure;
- the accelerated capital cost allowance (ACCA);
- royalty non-deductibility;
- the resource allowance; and
- Canadian exploration expense (CEE) and Canadian development expense (CDE).

As explained above, the total tax expenditure is the difference between taxes that would be paid under the benchmark and taxes that would be paid under the current regime. Each of the other tax expenditures are calculated as the difference between taxes that would be paid if that measure were removed and taxes paid under the current regime.

Most of the tax expenditures associated with the oil sands arise from what are referred to as timing differences. For example, the tax expenditure associated with the ACCA comes about because the ACCA permits companies to deduct certain capital expenses more quickly than would be permitted under the benchmark system. Under both the benchmark and the current regimes, the capital expenditure is deductible. The tax expenditure arises from the timing of the deductions.

In order to measure tax expenditures associated with timing differences, economists use the concept of the NPV. The NPV provides a mechanism to meaningfully compare different streams of expenditures. In order to calculate and compare different streams of tax expenditures, OSTEM calculates the NPV for all tax expenditures.

OSTEM also calculates the fiscal "uplift" corresponding to each tax expenditure calculation. The concept of fiscal uplift was introduced in the September 1996 study *The Level Playing Field: The Comparative Treatment of Competing Energy Investments*, jointly published by the Department of Finance and Natural Resources Canada. Uplift measures the relative level of support that the tax system provides to the industry. It is the ratio of the NPV of the tax expenditure and the NPV

[6] The February 28, 2000 Budget proposed to reduce, within five years, the federal corporate income tax rate from 28% to 21% on business income not currently eligible for special tax treatment. The October 18, 2000 Economic Statement set out a clear timetable for the reductions. It also indicated that the Government was consulting with the resource industry associations and the provinces on options to extend the lower income tax rate to this sector while at the same time improving the tax structure. The 'benchmark' tax rate used for this analysis of oil sands projects is 28%.

of the total capital investment in a project.[7] Applied to all the new oil sands projects, it represents the average increase in profitability generated by the deviations from the benchmark tax system. It is calculated as follows:

$$Uplift = \frac{(NPV\ of\ tax\ under\ benchmark\ system - NPV\ of\ tax\ under\ current\ system)}{NPV\ of\ capital\ investment}$$

OSTEM does not attempt to calculate the tax expenditures associated with those oil sands investments made prior to January 1, 1996. The study does not include an estimate of the tax expenditure associated with the Syncrude remission order or the tax expenditures associated with the pre-1996 Suncor and Syncrude projects. The report focuses on current and future planned investment in the industry and estimates the tax expenditures associated with those investments after January 1, 1996.

Macroeconomic Assumptions

Assumptions about oil prices, discount rates and exchange rates are based on the reference case in the June 1999 report *Canadian Energy Supply and Demand to 2025* by the National Energy Board of Canada (NEB). The key prices in the NEB's reference case are US$18.00 flat per barrel for West Texas Intermediate (WTI) (a benchmark light sweet crude oil) at Cushing, Oklahoma and Cdn$15.00 flat per barrel for bitumen at Hardisty, Alberta. (NEB figures are in 1997 dollars.) The value of the Canadian dollar is assumed to rise gradually to US$0.79 by 2025. The discount rate for calculating NPV is assumed to be 8%.

Project Data Inputs

The oil sands project data for OSTEM were provided by OSD and NRCan. The data cover the 41 new projects and expansions announced as of January 1, 1999 for the period between January 1, 1996 and January 1, 2010. The data include exploration, development and capital expenditures as well as production schedules and operating costs. In most, if not all, cases the available data are preliminary.

RESULTS

Output from the OSTEM takes the form of annual tax expenditures and tax revenues between 1996 and 2030. The model provides a constant dollar amount ($1996) and a fiscal uplift calculation for each of the measures in question, as well as an aggregate figure and percentage uplift for the total.

[7] The total uplift is measured as the difference between the benchmark system and the current system. The uplift for each component is measured by contrasting the current system to the current system without the measure in question. This is consistent with the measurement of NPV.

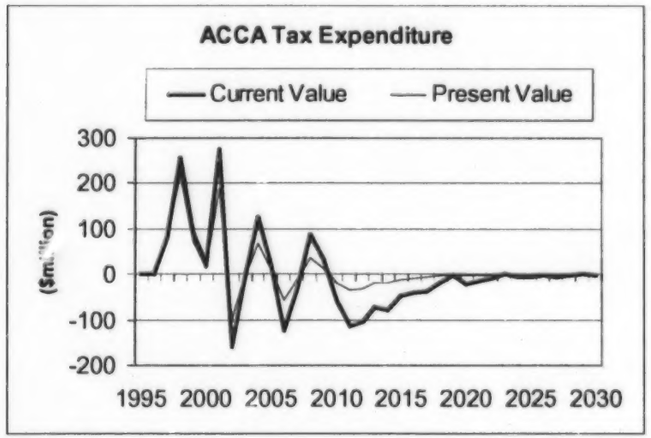
Due to the interactions of the three measures considered in this chapter it is not possible to sum the value of each measure to calculate the total tax expenditure. Therefore, the total tax expenditure is calculated, as was described above, separately.

Accelerated capital cost allowance (ACCA)

The ACCA Class 41(a) tax expenditures are highest in the 1996-2010 range, because most of the projects included in this study will be initiated by 2005, and ACCA tax expenditures peak during the first five to ten years of an oil sands project (see **Figure 1**). This is because the effect of ACCA is to increase CCA deductions in the period immediately following an investment, and reduce them later in the life of the asset. The tax expenditure becomes negative in later years because the benchmark tax system's CCA rate of 25% provides larger deductions in these years than the accelerated deductions, which by then will have been exhausted.

It must be noted that the tax expenditure associated with accelerated depreciation stems solely from the time value of money. Since all depreciable assets will generate full depreciation over some time period, the value of the tax expenditure will depend on the discount rate used to value the benefit of claiming deductions sooner rather than later. At a zero discount rate, there would be no tax expenditure associated with the ACCA. However, as the discount rate rises, the tax expenditure also rises. This issue is discussed in more detail in *Tax Expenditures: Notes to the Estimates/ Projections* page 81.

Figure 1:



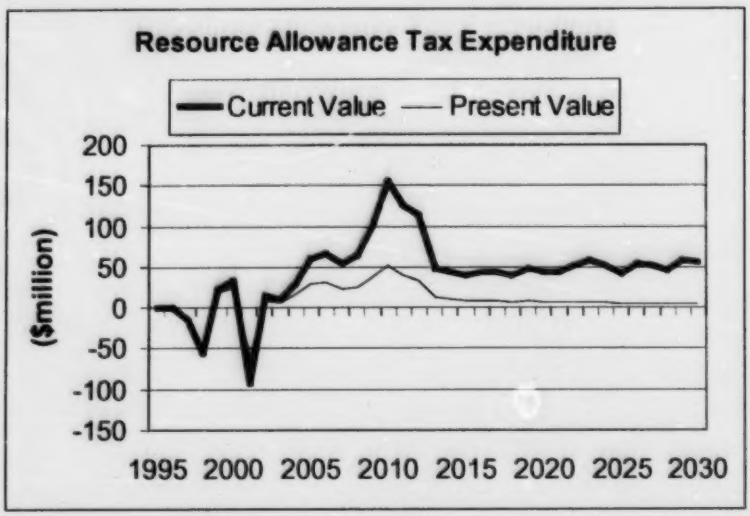
The model estimate of the total tax expenditure associated with new oil sands projects is within the range reported in earlier Tax Expenditure reports. This model estimates that the ACCA uplift

is 1.9% – within the 0.7% – 2.5% range reported in the above referenced report (p.81). The methods used to generate this estimate are also consistent with other previous estimates made by Finance, generating results that are comparable with earlier calculations.[8]

Resource allowance and royalty non-deductibility

Resource allowance tax expenditures arise when the resource allowance differs from non-deductible royalties. The resource allowance tax expenditure is low to negative in the early years (see **Figure 2**) when projects pay no royalties and yet the resource allowance results in some tax payable for the project owners. The resource allowance tax expenditure tends to increase after 10 years (see Appendix). The NPV of the resource allowance uplift is 1.9%.

Figure 2:



Canadian Exploration and Canadian Development Expenses[9]

The benchmark tax system would allow firms to deduct CDE and CEE at an annual rate of 25% on a declining balance basis. Furthermore, these deductions are assumed to be taken before the calculation of resource allowance, reducing the allowance and increasing tax payable. The tax expenditure due to CEE and CDE for the 1996-2030 period is $138 million with an uplift of 0.8%.

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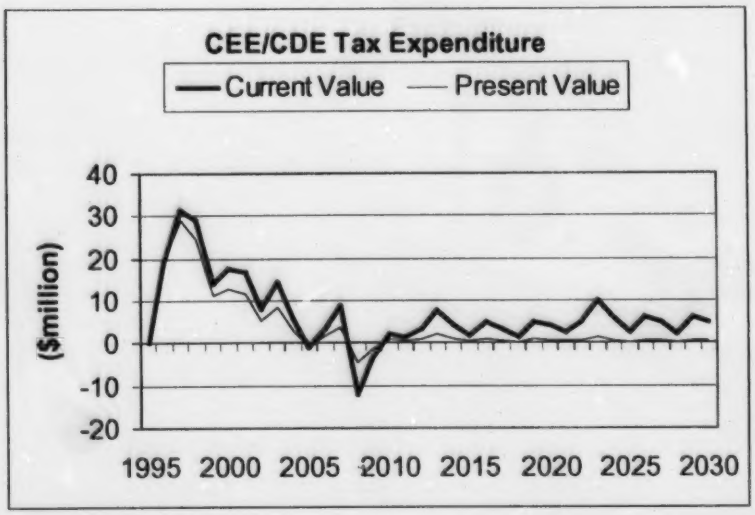
[8] See **The Level Playing Field: The Tax Treatment of Competing Energy Investments**, published jointly by Natural Resources Canada and Department of Finance, September 1996.

[9] Development expenses for most oil sands mining projects are quite small in relation to the required capital expenditures, although *in situ* projects involve a greater proportion of development spending.

Figure 3 below shows the profile of this expenditure.

Figure 3:



Aggregate Results

Figure 4 shows the total annual tax expenditures for all projects included in OSTEM from 1996 to 2030. The overall tax expenditure follows the same inter-temporal distribution as the ACCA, due to the importance of accelerated depreciation relative to resource allowance and CEE/CDE.

Figure 4:

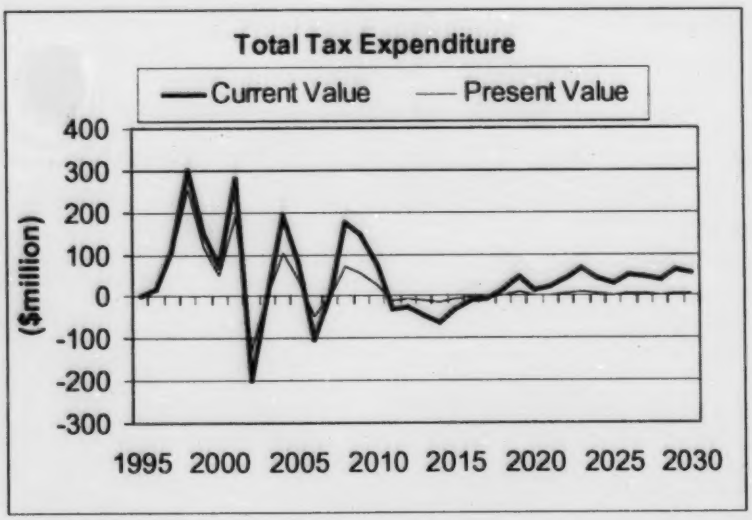


Figure 5:

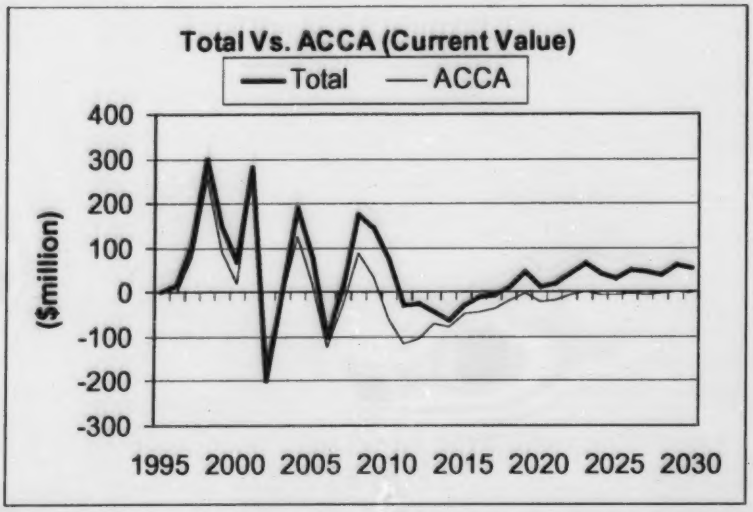
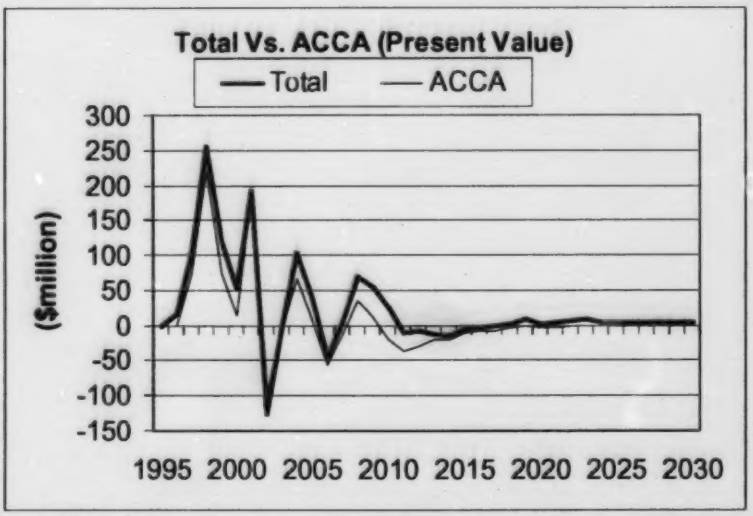


Figure 5 (above) and **6** (below) show the close correspondence between the total tax expenditure and the tax expenditure due to ACCA on both a current and a present value basis.

Figure 6:



As **Table 2** (below) shows, the NPV of the total income tax expenditure attributed to new oil sands projects from 1996 to 2030 is estimated to be $820 million (in 1996 dollars). The fiscal uplift generated by the federal income tax system represents 4.6% of total new investment in the industry. This tax expenditure comes from three mining sector tax incentives: ACCA ($338

million), resource allowance ($336 million) and favourable deduction rates for exploration and development expenses ($133 million). The NPV of the sum of future federal corporate income tax revenues created by these new oil sands projects is expected to be about $9.1 billion.

Table 2
Oil Sands Tax Expenditures: Summary

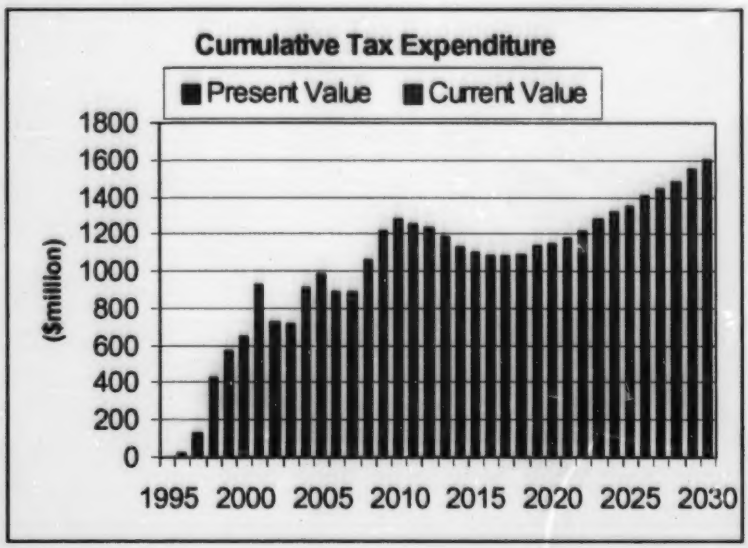
($Millions, NPV with an 8% discount rate)

	1996-2002	1996-2010	1996-2030	Uplift of tax expenditure
Cumulative tax revenues under current system	**$ 78**	**$ 3,113**	**$ 9,064**	
Total tax expenditures	**$ 583**	**$ 816**	**$ 820**	**4.6%**
1) ACCA	**$ 451**	**$ 478**	**$ 338**	**1.9%**
2) Resource Allowance and Royalty Non-Deductibility	**-$ 68**	**$ 145**	**$ 336**	**1.9%**
Resource Allowance	$ 117	$ 1,157	$ 3,158	17.9%
Royalty Non-deductibility	-$ 184	-$ 1,012	-$ 2,822	-16.0%
3) CDE/CEE	**$ 110**	**$ 120**	**$ 133**	**0.8%**

Note: Due to the interdependence of each of the three tax expenditure components, the sum of each estimate does not add up to the total.

Figure 7 illustrates the cumulative tax expenditure attributed to the oil sands industry in current and present value terms.

Figure 7:



CONCLUSION

The oil sands are a strategic Canadian resource. For over two decades the federal and provincial governments have provided incentives to develop and exploit this resource. The past development of the oil sands as well as recently announced expansions has been facilitated by these incentives. This document is an attempt to measure the federal corporate income tax cost of these incentives.[10]

OSTEM calculates the NPV of the costs to the federal government of the corporate income tax preferences currently given to the oil sands industry. The model also estimates the 'fiscal uplift', or the foregone revenue as a percentage of capital investments.

Investments in net present value terms to 1996 of about $18 billion (i.e., about $35 billion in current dollars) are expected to take place in the oil sands between 1996 and 2030. Over this same period, production from this investment is expected to be in the order of 14 billion barrels of oil with gross revenues of $84 billion NPV (all the following dollar amounts are in NPV terms). From this activity, federal corporate income tax revenues under the current tax regime are projected to be about $9 billion.

Total tax expenditures associated with this investment in the oil sands are projected to total $820 million for the period from 1986 to 2030, representing 4.6% of the total investment. Tax revenues are only $78 million from 1996 to 2002, but they total over $3 billion for the period 1996 to 2010.

The tax expenditure for the accelerated capital cost allowance reaches a peak in the period to 2002 and then declines. For the entire period, it accounts for about $340 million or 2% of the investment. The resource allowance and the non-deductibility of royalties taken together represent a negative tax expenditure in the period to 2002 but result in a positive $336 million for the period as a whole. Finally, Canadian exploration and development expenses are worth about $133 million or less than 1% of the total investment in the oil sands.

[10] For an estimate of the macroeconomic benefits of oil sands investments please see **Appendix E: Informetrica Study:** Macro-*Economic Benefits of an Expanded Canadian Oil Sands Industry.* Alberta Chamber of Resources, Spring 1995. ISBN 1-896532-05-5.

Appendix: Definitions

Current tax system

The current tax system incorporates several specific measures, each of which is described in more detail below:

1) ACCA: Class 41(a) capital expenditures associated with a new mine or a major expansion that increase output by more than 25% or require an investment of more than 5% of annual revenues qualify for ACCA, which allows for the immediate write-off of such expenses up to the extent of income from the project. Over the life of a project, deductions are the same in absolute value as the normal 25% CCA (Class 41(b)), but are considered a major tax expenditure since current deductions are valued more highly than future deductions. The relative value is expressed through discount rates. Firms initially take the 25% CCA deduction on all capital expenses, and then use the 100% deduction up to the full extent of project income (which is gross revenue minus operating expenses minus normal CCA).

2) CCA (Class 41(b)): is used for all types of maintenance capital expenditures not included in the ACCA. The "available for use" and "half year" rules apply. The basic rate for CCA is 25%, with pools calculated on a declining balance. Unlike ACCA, CCA deductions are not limited to the extent of income from a particular project.

> **"Ring fence" rule**: limits ACCA deductions to the extent of project income. In most cases, because of losses in the early years, ACCA cannot be deducted until several years into the project.
>
> **"Available for use" rules**: determines when a capital expense begins to become deductible. In most cases, this is the year the capital is put in use. However, for projects having to make investments over a number of years before production begins, there are special rules (the long-term project and rolling start rules) that permit CCA to be taken before the capital is actually put in use.
>
> **"Half-year" rule**: applies to CCA (not ACCA) and only allows half of the CCA for new purchases in the year that the capital becomes available for use. The other half is added to the pool in the next year.

3) CDE is deductible at 30%. The half-year rule does not apply.

4) CEE is deductible at 100%. The half-year rule does not apply.

5) Royalties: Crown royalties are generally not deductible.

6) Resource Allowance: This deduction is calculated as 25% of resource profits. Resource profits are calculated after the deduction of CCA but before any deductions for CEE, CDE, or interest expenses. In the early years, many projects have high CCA deductions coupled with low revenues. As a result the resource income of the new project is negative. However royalties will

not be negative. This will create a negative tax expenditure as the project's negative resource income reduces the company total resource income and therefore resource allowance of the entire firm. Implicitly, this assumes that every firm has net income from other sources.

Royalties

Royalties: The model assumes Alberta's generic royalty regime. Under this regime, project operators may choose whether or not to include revenues and costs associated with upgrading. We have assumed all projects are included in the royalty calculations unless specifically advised otherwise. Royalties consist of 1% of gross revenue until 'payout'. After payout the royalty is the greater of 1% of gross revenue and 25% of net project revenues. Net project revenues are calculated after the developer has recovered all project costs, including research and development costs, and a return allowance. All project cash costs including capital, operating, and research and development are 100% deductible in the year incurred. It should be noted that some producers are currently operating under previously negotiated royalty regimes or transitional terms.

Return allowance: This is a feature of the Alberta royalty regime. The provincial government begins charging royalties on net revenues only once the cumulative total of all gross income (gross revenues minus operating expenses minus royalties) less all capital expenses is positive. The return allowance annually increases the remaining pool of unrecovered capital expenses by the Government of Canada long-term bond rate. This measure compensates for the lost potential earnings that the company must absorb when investing in long term projects that incur negative cashflows in their initial stages of development.

Benchmark system

The benchmark tax system differs from the current system in the following ways:

1) **ACCA:** The benchmark tax system does not allow ACCA.

2) **CCA:** Deductible at 25% with pools calculated on a declining balance. The rules governing CCA deductions are the same as those currently employed.

3) **CDE:** Deductible at 25% on a declining balance basis and the half-year rule applies.

4) **CEE:** Deductible at 25% on a declining balance basis and the half-year rule applies.

5) **Royalties:** Crown royalties are deductible as a business expense.

6) **Resource Allowance:** This provision does not exist in the benchmark tax system.